

Submission under 37 C.F.R. §1.114  
Application No. 10/629,806  
Attorney Docket No. 030923

### **REMARKS**

Claims 1, 2, 4, 9, 12-31 are pending, of which claims 1, 16, 17 and 20-26 have been amended, and claims 27-31 have been added. Claim 13 was allowed.

(1) Claims 1, 2, 4, 9, 12 and 14-21 were rejected under 35 U.S.C. §102(e) as being anticipated by Kanda et al. (U.S. Patent No. 6,555,607).

Claims 1, 16, 17, 20 and 21 have been amended to delete the limitation of the “nonionic surfactant,” and to recite a limitation of the “polyphenol compound.” The deleted limitation of the “nonionic surfactant” is recited in newly added claims 27-31. The support of the amendment is found at e.g., page 16, line 15 to page 17, line 2; cancelled claim 11; and Materials D and E in Example 1 at page 38.

Although Ishibashi et al. disclose “the water soluble resins” including “polyvinyl acetal” as pointed out by the Examiner (pages 4 and 5 of the outstanding Office Action), the claimed “polyphenol compound” is different from the “the water soluble resins” disclosed by Ishibashi et al. The claimed “polyphenol compound” is not a resin. The Applicants herewith file a web page obtained through Wikipedia (<http://en.wikipedia.org/wiki/Polyphenol>) as a reference (hereinafter “Wikipedia”). One skilled in the art recognizes that “polyphenol compound” is not a resin. Please note that the information in Wikipedia does not limit the interpretation of the term

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“polyphenol compound.” The Applicants only intend to show by Wikipedia that “polyphenol compound” is not a resin, which is different from “the water soluble resins” or “polyvinyl acetal” disclosed by Ishibashi et al.

(2) Claims 1-4, 8, 9, 12 and 14-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ishibashi et al. (U.S. Patent No. 6,579,657) in view of Mizutani et al. (U.S. Publication No. 2002/0015909) or Yasunami et al. (U.S. Publication No. 2002/0028409).

The Examiner cites Mizutani et al. (U.S. Publication No. 2002/0015909) or Yasunami et al. (U.S. Publication No. 2002/0028409) in view of the claimed “nonionic surfactant,” which is now recited in claims 27-31. However, independent claims 1, 16, 17, 20 and 21 have amended to recite “polyphenol compound” as explained above. Thus, the same reasons as argued above apply. Reconsideration of the rejection is respectfully requested.

(3) Claims 22-26 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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In this Response, claims 22-26 have been rewritten in independent form including all of the limitations of the base claim and any intervening claims. Thus, claims 22-26 should be allowed.

(4) In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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Attachment: Limited Recognition  
Web page obtained through Wikipedia (<http://en.wikipedia.org/wiki/Polyphenol>)

# Polyphenol

From Wikipedia, the free encyclopedia

**Polyphenols** are a group of chemical substances found in plants, characterized by the presence of more than one phenol group per molecule. Polyphenols are generally further subdivided into hydrolyzable tannins, which are gallic acid esters of glucose and other sugars; and phenylpropanoids, such as lignins, flavonoids, and condensed tannins.

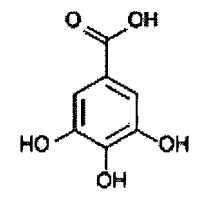
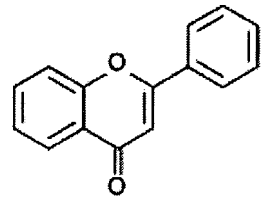
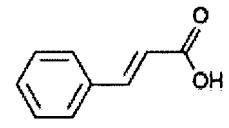
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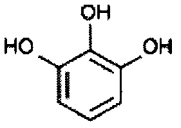
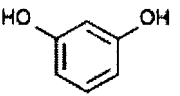
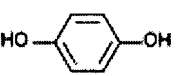
## Chemistry

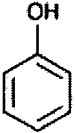
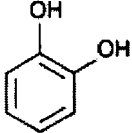
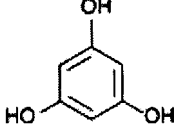
### Classification and Nomenclature

The subdivision of polyphenols into tannins, lignins, and flavonoids is derived from the variety of simple polyphenolic units derived from secondary plant metabolism of the shikimate pathway<sup>[1]</sup> as well as classical divisions based upon the relative importance of each base component to different fields of study. Tannin chemistry originated in the importance of the eponymously named tannic acid to the tanning industry; lignins to the chemistry of soil and plant structure; and flavonoids to the chemistry of plant secondary metabolites for plant defense, and flower color (e.g. from anthocyanins).

<b>Base Unit:</b>			
	Gallic Acid	Flavone	Cinnamic acid
<b>Class/Polymer:</b>	hydrolyzable tannins	Flavonoid, condensed tannins	Lignins

Polyphenols are also grouped and classified by the type and number of phenolic subcomponents present. More than one subcomponent can be present on a given polyphenol.

					
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Phenol	Pyrocatechol	Pyrogallol	Resorcinol	Phloroglucinol	Hydroquinone
Examples: coumaric acid derived lignins, kaempferol	Examples: catechin, quercetin, caffeic and ferulic acid derived lignins, hydroxytyrosol esters	Examples: gallo catechins (EGCG), tannins, myricetin, sinapyl alcohol derived lignins	Examples: resveratrol	Examples: almost all flavonoids	Examples: arbutin

The phenolic unit can often be esterified or methylated. It can also be found dimerized or further polymerized, creating a new class of polyphenol. For example, ellagic acid is a dimer of gallic acid and forms the class of ellagitannins, or a catechin and a gallo catechin can combine to form the red compound theaflavin, a process which also results in the large class of brown thearubigins in tea.

## In Foods

Notable sources of polyphenols include berries, tea, beer, grapes/wine, olive oil, chocolate/cocoa, walnuts, peanuts, pomegranates, yerba mate, and other fruits and vegetables.

High levels of polyphenols can generally be found in the fruit skins.

## Health benefits

Polyphenols were once briefly known as Vitamin P. However they were quickly found out to be non-essential and reclassified. The health benefits of specific polyphenols such as quercetin are well-established, there are less well-established claims of health benefits from all types of polyphenols.

Research indicates that polyphenols may have antioxidant characteristics with potential health benefits. They may reduce the risk of cardiovascular disease and cancer. <sup>[2]</sup> Polyphenols have also been investigated as a source of additional health benefit in organic produce, but no conclusion was made. <sup>[3]</sup> Polyphenols bind with nonheme iron (e.g. from plant sources) *in vitro* in model systems. <sup>[4]</sup> This may decrease its absorption by the body.

## See also

- List of phytochemicals and foods in which they are prominent
- Tannin
- Catechin
- Benzenediol

## References

1. ^ P. M. Dewick, *The Biosynthesis of Shikimate Metabolites*, Natural Product Reports 12:579-607 (1995)
2. ^ Arts, I.C. and P.C. Hollman, "Polyphenols and disease risk in epidemiologic studies." *American Journal Clinical Nutrition*, 2005. **81**(1 Suppl): p. 317S-325S.
3. ^ Nutrition Perspectives Vol 30, No. 3 May/June 2005
4. ^ E. Matuschek, U. Svanberg (2002) "Oxidation of Polyphenols and the Effect on In vitro Iron Accessibility in a Model Food System", *Journal of Food Science* **67** (1), pp. 420–424.

## External links

- Wine polyphenols vary with age and variety

Retrieved from "<http://en.wikipedia.org/wiki/Polyphenol>"

Categories: Phenols | Phytochemicals

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